



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,585	07/16/2003	Margaret S. Wooldridge	UOM 0273 PUSP	8885

22045 7590 07/26/2006

BROOKS KUSHMAN P.C.  
1000 TOWN CENTER  
TWENTY-SECOND FLOOR  
SOUTHFIELD, MI 48075

EXAMINER

WYSZOMIERSKI, GEORGE P

ART UNIT PAPER NUMBER

1742

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/620,585

Applicant(s)

WOOLDRIDGE ET AL.

Examiner

George P. Wyszomierski

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,8 and 10 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

Art Unit: 1742

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-86227.

The JP '227 reference discloses making nanoparticulate silicon dioxide 1-20 nm in diameter by decomposing a volatile silicon compound such as silicon hydride in a flame generated by burning a mixture of a combustible gas (e.g. hydrogen) and a combustion gas (e.g. oxygen). The gases used in the prior art would have arrived at the burning location in JP '227 in a manner that meets the "non-premixed" limitations of the instant claims, i.e. the individual gases would have arrived at the burning location through passageways for each gas desired. While the gases would eventually be mixed in the prior art, it is noted that the instant claims do not specify any particular time and/or location where the combustion and combustible gases could combine and therefore the arrangement employed in JP '227 is held to meet the limitations of the present claims. Further, with respect to the specific structure of passageways as defined in step (a) of instant claim 1, this is seen as defining largely apparatus limitations, and as such do not render a process patentable when all of the process steps as claimed are disclosed in the prior art. Compare *In re Sweeney* (72 USPQ 501). As noted above, the JP '227 process would appear to be amenable to being performed in an apparatus having a structure in accord with the instant claims.

Thus, a prima facie case of obviousness is established between the disclosure of JP '227 and the presently claimed invention.

3. Claims 1-5, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glumac et al. (U.S. Patent 5,876,683).

Glumac discloses producing nanophase powders of e.g. silicon dioxide by mixing a combustion gas such as hydrogen with a combustible gas such as oxygen to produce a flame, and introducing a precursor such as a volatile metal compound into the flame to decompose the precursor into the desired material. With respect to instant claim 8, Glumac discloses the presently claimed inert gas; see Glumac column 4, lines 3-5. With respect to instant claim 10, Glumac column 4, lines 33-35 indicates that the flow rate of the gas stream can be controlled to ensure complete decomposition of the precursor in the flame, and this would encompass control of the oxidation state of the combusted product.

Glumac does not specify some of the limitations regarding the flame burner and arrangements of passageways as recited in clause (a) of instant claim 1, and does not specify a particle size as recited in instant claim 5. These differences are not seen as resulting in a patentable distinction between the prior art and the claimed invention because:

a) With respect to the flame burner and passageways limitations, the remarks made supra with regard to apparatus limitations in a process claim apply equally as well in this instance. While Applicant points out in remarks filed June 12, 2006 that the gases in Glumac are apparently mixed prior to combustion, this does not distinguish the claimed invention from the prior art because the instant claims do not specify any particular time and/or location at which the combusting and combustible gases could combine.

b) With regard to particle size, the description of the products of Glumac as being "nanophase" would imply a size as presently claimed to one of skill in the art.

Thus, a prima facie case of obviousness is established between the disclosure of Glumac et al. and the presently claimed invention.

Art Unit: 1742

4. In a response filed June 12, 2006, Applicant alleges that the presently claimed limitations regarding “non-premixed” gases (and associated apparatus limitations) distinguish the claimed invention from the disclosures of JP ‘227 and/or Glumac. Applicant’s comments have been carefully considered, but are not persuasive of patentability because the instant claims merely recite that at some point a “non-premixed combusting gas” is supplied to a combusting gas passageway, and a “non-premixed combustible gas” is supplied to a combustible gas passageway. In the prior art disclosures, clearly the gases used will approach the reactors employed in those references through passageways of some sort; mixture thereof will only occur at a point where space is provided accessible to both gases, and the same is true for any arrangement that would be used in the claimed process. Note further that while step (b) of instant claim 1 recites “igniting to form a primary flame”, this claim does not specify what material is ignited, i.e. ignition of either or both of a combusting gas and a combustible gas would fall within the scope of the instant claims. Note also that step (c) of claim 1 merely recites introducing a precursor into at least one of the combusting gas, combustible gas, or some other precursor supply passageways, i.e. does not require any particular relationship between the location(s) where a precursor is delivered to a reactor, and where combustion may occur.

The page entitled “Comparison of tin dioxide nanoparticles generated using different combustion approaches” has been considered by the examiner.

Art Unit: 1742

5. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

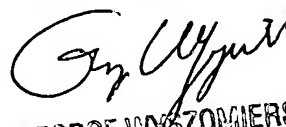
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. All patent application related correspondence transmitted by facsimile must be directed to the new central facsimile number, (571)-273-8300. This new Central FAX Number is the result of relocating the Central FAX server to the Office's Alexandria, Virginia campus.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GPW  
July 24, 2006

  
GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER  
GROUP 1742